

APPROVED

By CUONG H NGUYEN at 4:29 pm, Jan 08, 2010

Amendments to the Claims:

The listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Previously Amended) A data product readable by one of a computer and a map data processing apparatus, comprising:

map data including map-related information related to a map, wherein:

the map-related information includes a compilation of a plurality of information elements;

the map-related information being updateable in units of the individual information elements at the map data processing apparatus; and

the information elements each include identification information indicating whether information pertaining to the information element is valid or invalid; and

the identification information of an information element that has been updated and become old is set invalid so that the map data processing apparatus excludes the information element with the identification information being set invalid from the map-related information.

2. (Previously Presented) A data product readable by one of a computer and a map data processing apparatus, comprising:

map data including map-related information related to a map, wherein:
the map-related information includes a compilation of a plurality of
information elements;

the map-related information being updateable in units of the individual
information elements at the map data processing apparatus;

the map-related information includes management information used to
manage the map-related information, which is also updated when the map-
related information is updated in units of the individual information elements;
and

roads are each indicated as a link string having a plurality of continuous
links, with nodes representing points on the roads and each link representing a
road portion connecting two adjacent nodes; and

the information elements each correspond to information related to a link
string and the map-related information is updated in units of link strings.

3. (Original) A data product according to claim 2, wherein:
the information related to the link string includes node position
information indicating a position of a node contained in the link string.

4. (Previously Presented) A data product according to claim 2,
wherein:

the information related to the link string includes guidance information related to the link string.

5. (Original) A data product according to claim 3, wherein:
a plurality of levels each corresponding to one of a plurality of scaling factors of the map are defined;
a level corresponding to a scaling factor with a smaller value that renders the map as a wider area map is designated as a higher-order level;
a plurality of sets of map-related information are provided each in correspondence to one of the plurality of levels; and
the node position information included in the information related to the link string at a specific level contains node position information of a node at the specific level and node position information on a node at a lower-order level corresponding to the node at the specific level.

6. (Previously Presented) A data product readable by one of a computer and a map data processing apparatus, comprising:
map data including map-related information related to a map, wherein:
the map-related information includes a compilation of a plurality of information elements;
the map-related information being updateable in units of the individual information elements at the map data processing apparatus;

the map-related information includes management information used to manage the map-related information, which is also updated when the map-related information is updated in units of the individual information elements;

the map-related information is information related to a background used to display a road map;

the information elements each constitute information related to a background object corresponding to a single display management unit;

the information related to a background object corresponding to the single display management unit includes information indicating a drawing order; and

the map-related information assumes a structure that allows a rearrangement of a plurality of sets of information each related to a background object corresponding to the single display management unit which are grouped together, in correspondence to the drawing order when one of the plurality of sets of information each related to a background object corresponding to the single display management unit is updated.

7. (Original) A data product according to claim 6, wherein:

the information related to a background object corresponding to the single display management unit is information with regard to a single polygon, a single poly line or a single point related to the background.

8. (Canceled).

9. (Previously Presented) A data product readable by one of a computer and a map data processing apparatus, comprising:
- map data including map-related information related to a map, wherein:
 - the map-related information includes a compilation of a plurality of information elements;
 - the map-related information being updateable in units of the individual information elements at the map data processing apparatus;
 - the map-related information includes management information used to manage the map-related information, which is also updated when the map-related information is updated in units of the individual information elements;
 - the information elements each correspond to information related to a single name used to display a road map;
 - the information related to a single name includes information indicating a drawing order; and
 - the map-related information assumes a structure that allows a rearrangement of a plurality of sets of information each related to a single name which are grouped together, in correspondence to the drawing order when one of the plurality of sets of information related to a single name is updated.
10. (Canceled).

11. (Previously Presented) A data product readable by one of a computer and a map data processing apparatus, comprising:
 - map data including map-related information related to a map, wherein:
 - the map-related information includes a compilation of a plurality of information elements;
 - the map-related information being updateable in units of the individual information elements at the map data processing apparatus;
 - the map-related information includes management information used to manage the map-related information, which is also updated when the map-related information is updated in units of the individual information elements;
 - points on roads constitute nodes;
 - the map-related information is information related to connections of the nodes used for route calculation;
 - the information elements each correspond to information managed in a single node unit;
 - a plurality of levels each corresponding to one of a plurality of scaling factors of the map are defined;
 - a level corresponding to a scaling factor with a smaller value that renders the map as a wider area map is designated as a higher-order level;
 - a plurality of sets of map-related information are provided each in correspondence to one of the plurality of levels; and

node position information included in the information managed in the single node unit at a specific level contains node position information on a node at the specific level and node position information on a node at a lower corresponding to the node at the specific level.

12. (Original) A data product according to claim 11, wherein:
the information managed in the single node unit includes information related to a subject node and information related to a node adjacent to the subject node.

13. (Canceled).

14. (Previously Presented) A data product readable by one of a computer and a map data processing apparatus, comprising:
map data including map-related information related to a map, wherein:
the map-related information includes a compilation of a plurality of information elements;
the map-related information being updateable in units of the individual information elements at the map data processing apparatus;
the map-related information includes management information used to manage the map-related information, which is also updated when the map-related information is updated in units of the individual information elements;

points on roads constitute nodes;

the map-related information is information related to connections of the nodes used for route calculation;

a plurality of levels each corresponding to one of a plurality of scaling factors of the map are defined;

a level corresponding to a scaling factor with a smaller value that renders the map as a wider area map is designated as a higher-order level;

a plurality of sets of map-related information are provided each in correspondence to one of the plurality of levels; and

the information elements each constitute information related to a node at a lower-order level corresponding to information related to a node at a specific level.

15. (Original) A data product according to claim 14, wherein:

node position information included in the information related to the node contains position information on the node at a level having contained therein the node and position information on a node at a lower-order level corresponding to the node at the level having contained therein the node.

16. (Previously Presented) A data product readable by one of a computer and a map data processing apparatus, comprising:

map data including map-related information related to a map, wherein:

points on roads constitute nodes and road portions extending between adjacent nodes are indicated as links;

information used to identify each of the nodes includes node position information related to latitude and longitude; and

a link ID used to identify each of the links having a map scaling factor, configured to include a combination of the node position information related to the latitude and longitude, and a linking parameter identifying a corresponding node with a lower map scaling factor of a node at one end of a target link and the node position information related to the latitude and longitude, and a linking parameter identifying a corresponding node with the lower map scaling factor of a node at another end of the target link.

17. (Previously Presented) A data product according to claim 16, wherein:

the link ID specifies a direction of the target link in correspondence to an order with which the node position information related to the latitude and longitude of the node at the one end of the target link and the node position information related to the latitude and longitude of the node at the other end of the target link are combined.

18. (Previously Presented) A data product according to claim 16, wherein:

a plurality of levels each corresponding to one of a plurality of scaling factors of the map are defined;

a level corresponding to a scaling factor with a smaller value that renders the map as a wider area map is designated as a higher-order level;

a plurality of sets of map-related information are provided in each in correspondence to one of the plurality of levels; and

the node position information at a specific level contains node position information on a node at the specific level and node position information on a node at a lower-order level corresponding to the node at the specific level.

19. (Canceled).

20. (Previously Presented) A data product according to claim 2 , wherein the data product is a recording medium having recorded therein the map data.

21. (Currently Amended) A map data processing apparatus, comprising:

a recording medium drive unit having loaded therein a recording medium[; a data product]] having recorded therein map data, readable by one of a computer and a map data processing apparatus, the recording medium comprising:

map data including map-related information related to a map,
wherein:

the map-related information includes a compilation of a plurality of
information elements;

the map-related information being updateable in units of the
individual information elements at the map data processing apparatus;

the map-related information includes management information
used to manage the map-related information, which is also updated when the
map-related information is updated in units of the individual information
elements; [[and]]

roads are each indicated as a link string having a plurality of
continuous links, with nodes representing points on the roads and each link
representing a road portion connecting two adjacent nodes; and

the information elements each correspond to information related to
a link string and the map-related information is updated in units of link strings;

a nonvolatile memory;

an update data acquisition unit that acquires update data used to update
map-related information in units of the individual information units and stores
the update data into the nonvolatile memory; and

a processing unit that processes map data based upon the map data
recorded in the recording medium and the update data stored in the nonvolatile
memory.